

KORFUND

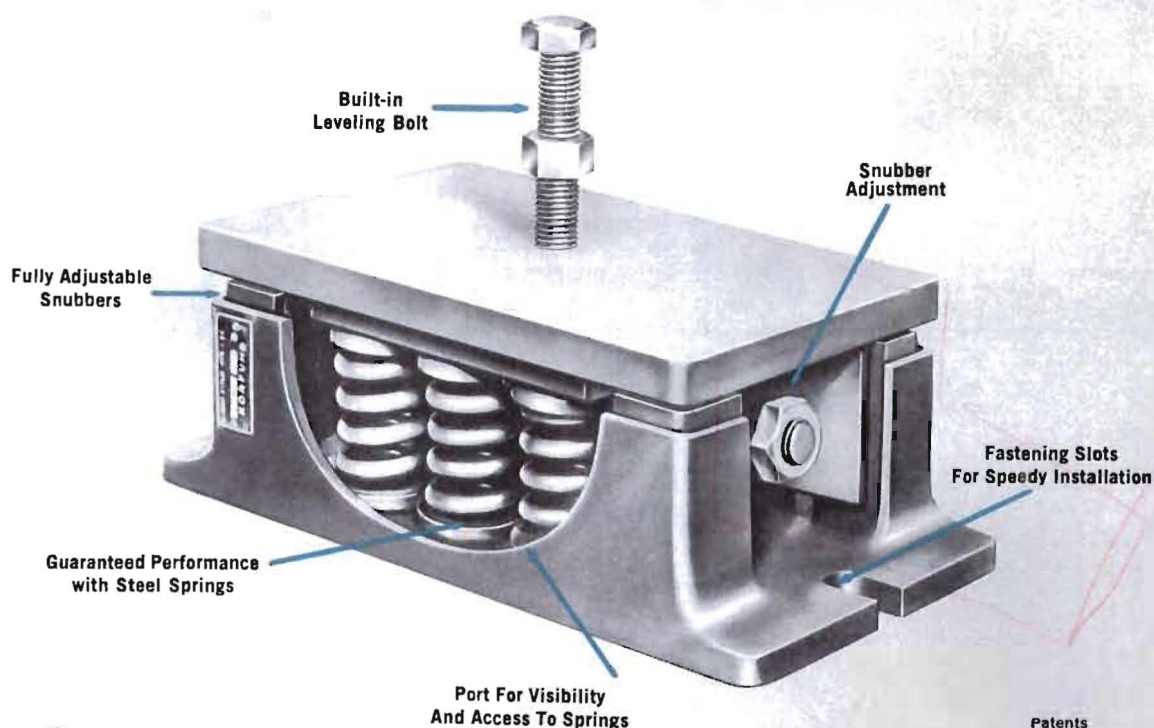
VIBRO-ISOLATOR

ALL PURPOSE—ALL DIRECTIONAL

SERIES L

**FOR EFFICIENT, ECONOMICAL CONTROL
OF VIBRATION, SHOCK, & NOISE**

- Eliminates bolting equipment to floors
- Eliminates foundations, speeds installation
- Increases production, improves quality
- Allows better plant layout
- Reduces building and machine maintenance
- Improves working conditions
- Stops vibration and noise transmission



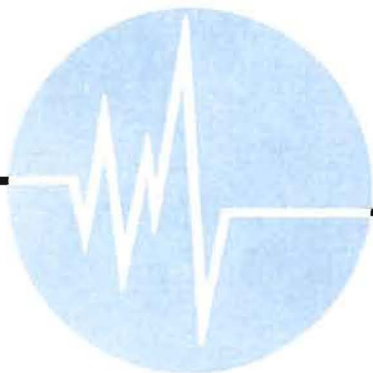
Patents
2,359,941
2,466,480



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KORFUND

SERIES L VIBRO-ISOLATOR

ALL PURPOSE—ALL DIRECTIONAL

WHY USE STEEL SPRING VIBRO-ISOLATORS?

Steel spring Vibro-Isolators provide the most efficient method of isolating vibration, approaching 100% in effectiveness. Strongly recommended for most installations, they are essential on critical jobs, provide greatest over-all economy, permit equipment installations on lighter sub-structures, and are satisfaction guaranteed.

The high efficiency of steel spring Vibro-Isolators is due to the greater deflections which they provide—up to 2" for the Series L Isolators (up to 10" on special Korfund Isolators) compared to about $\frac{1}{4}$ " maximum for other materials. Breakage or loss of resiliency through service in steel spring Isolators is practically non-existent because they are carefully designed so that the endurance limit is never exceeded. And, unlike other materials, steel spring performance can be accurately predetermined, eliminating costly trial and error. Rugged construction plus the properly designed steel springs give Vibro-Isolators long life—usually greater than the machine itself.

Series L Vibro-Isolators consist of steel or cast housings (see Housing Materials) containing 1 to 12 oil tempered, high carbon or chrome vanadium steel springs. The upper and lower members of the housing are held in their relative position against lateral movement by four resilient inserts. The equipment to be isolated is mounted on the top plate, from which the adjusting bolt transfers the load to the spring compression plate and to the vibration absorbing springs. The adjusting bolt provides a means for leveling the equipment, thereby eliminating the need for leveling jacks, shims, or wedges.

When the load due to the weight of the machine is first applied, the springs are compressed, causing the top plate to move down. The top plate is raised to the proper operating height and the machine leveled by turning the adjusting bolt. Installation and adjustment is as simple as that.

The resilient inserts, which resist horizontal thrust, are made of various materials depending upon the application. These inserts in the LK and LI Isolators can be adjusted to provide varying degrees of damping in all directions by two horizontal bolts, one at each end to control movement. The inserts are large and designed to accomplish damping by means of internal friction thus avoiding the greater wear and greater stiffness (which causes vibration transmission) of other types which utilize surface friction.

Though Isolator springs have a large overload safety factor, Korfund's exclusive design permits changing of springs in the field without removing the Isolators should actual loads be substantially different than those calculated; e.g., if additional piping is added, or if accessory equipment is added to the isolated machine. All operating parts of the Isolator are completely visible.

(All designs and specifications subject to change without notice.)

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TO BOLT OR NOT TO BOLT

(1) **NO BOLTING TO FLOOR** is required with most types of machines. (e.g. grinders, jig borers, boring mills, lathes, small compressors and most punch presses)—just set the Isolators on the floor. This means real savings through: (1) Eliminating drilling of the floor and setting of anchor bolts, and (2) rapid mobility of machines for maximum production line efficiency. Eliminating foundation bolts is possible because Vibro-Isolators absorb the dynamic forces generated by the machine. The result is practically a static weight on the floor instead of the large variations in bearing load which cause "walking" of non-isolated machines.

(2) Maximum fastening calling for the use of foundation bolts is required only for machines with large unbalanced forces

(e.g. crushers), large overhanging weights (e.g. some inclinable punch presses), or machines subject to belt pull from separately mounted motors.

(3) Intermediate fastening requirements (e.g. some surface grinders), may be met by cementing the Isolators to the floor by means of $\frac{1}{8}$ " thick Korfund felt pads—developed bond strength 65 psi. This method also avoids drilling holes in the floor, and the machines can be readily relocated by dissolving the cement with a special solvent. NOTE: The felt pads act only as a cementing intermediary and have little value for sound absorption or vibration isolation; if structurally borne noise transmission is a problem, use Korfund synthetic rubber sound insulation pads under the Isolator (see arrangement 4, page 6).

VARIATIONS AVAILABLE

The Series L Vibro-Isolators are the most versatile vibration control mountings available. They are offered in several standard variations at no extra charge; in addition, special modifications are available at nominal extra charges.

LEVEL ADJUSTMENT: Regular, external adjustment (type LK and LN) for the majority of installations or internal adjustment (type LI and LO) are standard. The types LI and LO have internal adjustment which permits their location anywhere, irrespective of availability or location of bolt holes in the machine base or concrete foundation (see arrangements 2 and 3, page 6). The size J is available with internal adjustment only.

ADJUSTING BOLT: Standard bolt will pass through 2" machine leg. Longer bolts for thicker legs are special.

SNUBBER ADJUSTMENT: Fully adjustable snubbing by means of end nuts is standard for LK and LI Isolators; for size A, adjustment is slightly different from arrangement shown. LN and LO have non-adjustable inserts for alignment purposes, without any snubbing action; they can be converted to LK and LI in the field.

SNUBBER INSERTS: Oil resistant synthetic rubber is standard for LK and LI. Composition cork is standard for LN and LO, and in LK and LI for light loads (in Isolators using the numbers 32, 33, and 34 springs). Special: Rubber impregnated duck for heavy duty service, asbestos for high temperatures.

SPRINGS: Oil tempered high carbon or chrome-vanadium steel is standard. Special: Softer springs for lighter loads, stainless steel or coated springs for corrosion resistance.

HOUSING MATERIALS: Cast semi-steel is standard for all Isolators except size H (malleable casting), and size J (welded steel). All other Isolators are available in malleable castings or welded steel at extra charge.

FASTENING TO FLOOR: Slotted holes for bolts in base plate are standard. Special: Korfund felt pads, or synthetic rubber sound pads, and cement for cementing to floor.,

FASTENING TO MACHINE: Single bolt is standard on types LK, LN, and LM Isolators. Types LI and LO have no provision for fastening, but one tapped hole will be furnished without charge upon request. Special: extra tapped holes in top plate for bolting; felt and cement for cementing (LI and LO only).

SOUND DAMPING: For maximum noise absorption, Korfund waffle-embossed synthetic rubber pads are available at extra charge (see arrangement 4, page 6).

PROTECTIVE COATINGS: Vista Green enamel is standard. Special: zinc chromate primer (salt water corrosion), neoprene coating (chemical corrosion), canvas enclosure (heavy dust or powder accumulations), cadmium plated bolts and nuts.

KEY TO DESIGNATIONS WHEN ORDERING

Isolator Designations			Accessory Pad Designations			
Type	Leveling	Snubbing	Type	Top Plate	Bottom Plate	
LK	External	Adjustable			Cemented	Bolted
LI	Internal	Adjustable	Felt	A	E	G
LN	External	Non-Adjustable	Rubber	B	F	H
LO	Internal	Non-Adjustable	Suffixes shown above follow spring number in designation.			

Example LNA-45H = External leveling, non-adjustable snubbing, "A" size housing, #45 spring, rubber pad, and isolation washers for bolted arrangement.

HOW TO SPECIFY SERIES L VIBRO-ISOLATORS

"The isolation mountings shall consist of steel or cast iron top and bottom housings incorporating one or more steel springs and shall be provided with built-in leveling bolts and built-in, resilient chocks to control oscillation and withstand lateral forces in all directions; they shall be Korfund Series L Vibro-Isolators or approved equal, and shall be installed in accordance with the manufacturer's instructions."

CAPACITY Data Applies

ISOLATOR		MAX. CAP. IN POUNDS
HOUSING SIZE	SPRING NUMBER (1)	MAX. STEADY
A	32	150
	33	210
	34	300
	45	385
	46	540
	47	730
	57	1,100
	68	1,300
	25	385
	26	525
D	32	300
	33	420
	34	600
	45	770
	46	1,080
	47	1,460
	57	2,200
	68	2,600
	25	770
	26	1,050
E	32	600
	33	840
	34	1,200
	45	1,540
	46	2,160
	47	2,920
	57	4,400
	68	5,200
	25	1,540
	26	2,100
F	32	900
	33	1,260
	34	1,800
	45	2,310
	46	3,240
	47	4,380
	57	6,600
	68	7,800
	25	2,310
	26	3,150
G	32	1,350
	33	1,890
	34	2,700
	45	3,460
	46	4,850
	47	6,560
	57	9,900
	68	11,700
	25	3,465
	26	4,725
H	754	7,640
	755	9,540
	756	11,450
	757	13,370
	758	15,300
	759	17,200
J	7512	22,900

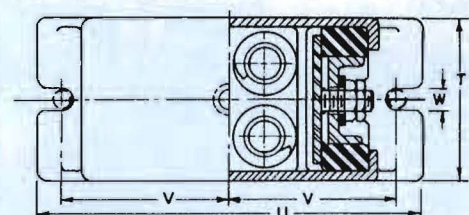
(1) First 2 digits indicate quantity of any, indicate quantity of in an Isolator for spec #45 and two #46 springs (no impact). Rating applications on punch. (3) Static spring deflect (4) Minimum operating tension shown in reference (5) These are special at those possible with standard applications. † 7 or 8 springs may be used

TABLE A
CAPACITY & CHARACTERISTICS
 Data Applies to Types LK, LI, LM, LN & LO

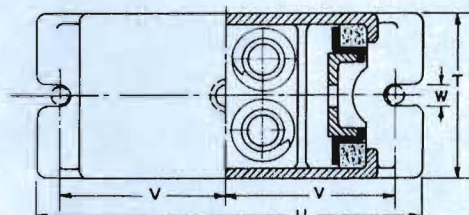
ISOLATOR	HOUSING SIZE	SPRING NUMBER (1)	MAX. CAPACITY IN POUNDS (2)		ISOLATOR CONSTANT LBS./INCH (3)	FREE HEIGHT INCHES		MINIMUM WORKING HEIGHT (4)	QUANTITY OF SPRINGS
			MAX. STEADY	MAX. IMPACT		LK & LN	LI & LO		
A	32	32	150	—	75	4 7/8"	5 5/8"	3 1/2"	1
	33	33	210	—	117	4 7/8"	5 5/8"		
	34	34	300	—	200	4 7/8"	5 5/8"		
	45	45	385	290	440	3 1/2"	4 1/4"		
	46	46	540	405	800	3 1/2"	4 1/4"		
	47	47	730	550	1,225	3 1/2"	4 1/4"		
	57	57	1,100	825	2,130	3 7/8"	4 1/4"		
	68	68	1,300	1,225	2,650	4 1/4"	4 5/8"		
	25	25	385	—	226	4 7/8"	5 5/8"		
	26	26	525	—	350	4 7/8"	5 5/8"		
D	27	27	700	—	560	4 7/8"	5 5/8"	4"	2
	28	28	1,040	(5)	1,095	5 1/4"	5 5/8"		
	29	29	1,400	—	1,858	5 1/4"	5 5/8"		
	32	32	300	—	150	5 3/8"	6"		
	33	33	420	—	234	5 3/8"	6"		
	34	34	600	—	400	5 3/8"	6"		
	45	45	770	580	880	4"	4 5/8"		
	46	46	1,080	810	1,600	4"	4 5/8"		
	47	47	1,460	1,100	2,450	4"	4 5/8"		
	57	57	2,200	1,650	4,260	4 1/8"	4 3/4"		
E	68	68	2,600	2,450	5,300	4 1/2"	5 1/8"	4 1/8"	4
	25	25	770	—	452	5 3/8"	6"		
	26	26	1,050	—	700	5 3/8"	6"		
	27	27	1,400	(5)	1,120	5 3/8"	6"		
	28	28	2,080	—	2,190	5 1/2"	6 1/8"		
	29	29	2,800	—	3,716	5 1/2"	6 1/8"		
	32	32	600	—	300	5 5/8"	6 1/8"		
	33	33	840	—	468	5 5/8"	6 1/8"		
	34	34	1,200	—	800	5 5/8"	6 1/8"		
	45	45	1,540	1,160	1,760	4 1/4"	4 3/4"		
F	46	46	2,160	1,620	3,200	4 1/4"	4 3/4"	4 1/4"	6
	47	47	2,920	2,200	4,900	4 1/4"	4 3/4"		
	57	57	4,400	3,300	8,520	4 1/4"	4 7/8"		
	68	68	5,200	4,900	10,600	4 5/8"	5 1/4"		
	25	25	1,540	—	904	5 3/8"	6 1/8"		
	26	26	2,100	—	1,400	5 3/8"	6 1/8"		
	27	27	2,800	(5)	2,240	5 3/8"	6 1/8"		
	28	28	4,160	—	4,380	5 3/8"	6 1/4"		
	29	29	5,600	—	7,432	5 3/8"	6 1/4"		
	32	32	900	—	450	5 1/4"	6 1/2"	4 1/4"	9†
G	33	33	1,260	—	702	5 3/4"	6 1/2"		
	34	34	1,800	—	1,200	5 3/4"	6 1/2"		
	45	45	2,310	1,740	2,640	4 3/8"	5 5/8"		
	46	46	3,240	2,430	4,800	4 3/8"	5 5/8"		
	47	47	4,360	3,300	7,350	4 3/8"	5 5/8"		
	57	57	6,600	4,950	12,780	4 1/2"	5 1/4"		
	68	68	7,800	7,350	15,900	4 7/8"	5 5/8"		
	25	25	2,310	—	1,356	5 3/4"	6 1/2"		
	26	26	3,150	—	2,100	5 3/4"	6 1/2"		
	27	27	4,200	(5)	3,360	5 3/4"	6 1/2"		
H	28	28	6,240	—	6,570	5 7/8"	6 5/8"	6 1/2"	8
	29	29	8,400	—	11,150	5 7/8"	6 5/8"		
	32	32	1,350	—	675	5 7/8"	6 1/2"		
	33	33	1,890	—	1,053	5 7/8"	6 1/2"		
	34	34	2,700	—	1,800	5 7/8"	6 1/2"		
	45	45	3,460	2,610	3,960	4 1/2"	5 1/8"		
	46	46	4,850	3,645	7,200	4 1/2"	5 1/8"		
	47	47	6,560	4,950	11,025	4 1/2"	5 1/8"		
	57	57	9,900	7,425	19,160	4 5/8"	5 1/4"		
	68	68	11,700	11,025	23,850	5"	5 5/8"		
I	25	25	3,465	—	2,034	5 7/8"	6 1/2"	7 5/8"	12
	26	26	4,725	—	3,150	5 7/8"	6 1/2"		
	27	27	6,300	(5)	5,040	5 7/8"	6 1/2"		
	28	28	9,360	—	9,860	6"	6 5/8"		
	29	29	12,600	—	16,720	6"	6 5/8"		
	754	754	7,640	5,720	11,540	7"	8"		
J	755	755	9,540	7,150	14,430	7"	8"	6 1/2"	8
	756	756	11,450	8,580	17,320	7"	8"		
	757	757	13,370	10,000	20,200	7"	8"		
	758	758	15,300	11,460	23,090	7"	8"		
	759	759	17,200	12,900	25,970	7"	8"		
	7512	7512	22,900	17,160	34,640	—	8 1/4"		

- (1) First 2 digits indicate spring designation number. Additional digits, if any, indicate quantity of springs used. Different springs may be combined in an Isolator for special conditions; for example, LKE-452-462 has two #45 and two #46 springs.
- (2) Ratings listed under "STEADY" are maxima for steady running applications (no impact). Ratings listed under "IMPACT" are maxima for impact applications on punch presses, hammers, and pulverizers.
- (3) Static spring deflection in inches = load ÷ Isolator constant.
- (4) Minimum operating height = free height - spring deflection, or dimension shown in referenced column, whichever is greater.
- (5) These are special alloy steel springs providing greater deflections than those possible with standard springs. They are normally not used for impact applications.

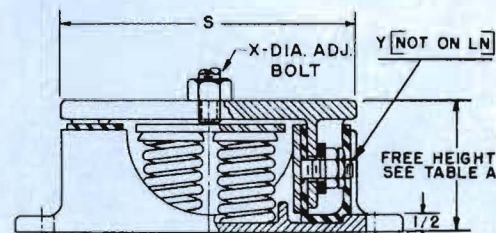
† 7 or 8 springs may be used for special job conditions



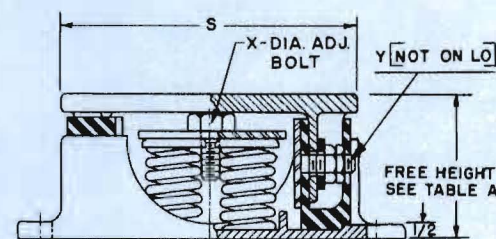
TYPICAL PLAN VIEW OF THE TYPES LK & LI ISOLATOR, SIZE E SHOWN



TYPICAL PLAN VIEW OF THE TYPES LN & LO ISOLATOR, SIZE E SHOWN



TYPICAL ELEVATION VIEW OF THE TYPES LK & LN ISOLATOR, SIZE E SHOWN



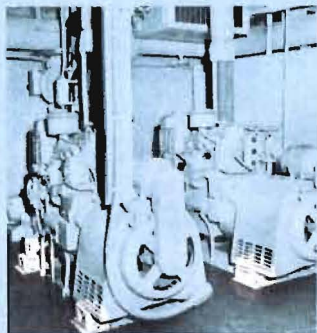
TYPICAL ELEVATION VIEW OF THE TYPES LI & LO ISOLATOR, SIZE E SHOWN

TABLE B
 DIMENSIONS & SHIPPING WEIGHTS

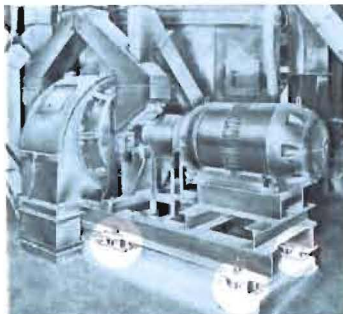
Dim. in Inches	ISOLATOR HOUSING SIZE						
	A	D	E	F	G	H	J
S	4	6 7/8	9 1/8	9 1/8	11 1/2	11 1/2	13 3/4
T	2 1/2	5	5	7	7	7	7
U	6 7/8	9 1/2	11 3/4	11 3/4	14	14	16 1/4
V	2 3/4	4	5 1/8	5 1/8	6 1/4	6 1/4	7 3/8
W	3 1/8	3 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8
X	1/2	5/8	5/8	3/4	3/4	1	1*
Y	3/8	5/8	5/8	3/4	3/4	3/4	3/4
Shipping Wt. lbs.	7	20	25	35	45	80	120

*Type LI/J and LO/J furnished with two internal adjustment bolts.

EFFICIENT, ECONOMICAL VIBRATION CONTROL

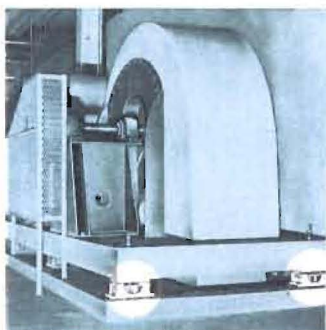


1 Korfund Isolators stopped the transmission of severe vibration from engines. They protect engines from shocks and from twisting of ship's hull.

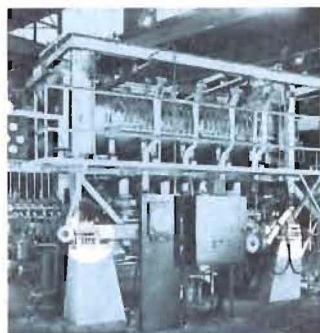


2 Mill on upper floor of steel structure. Korfund Isolators solved serious problem and reduced maintenance.

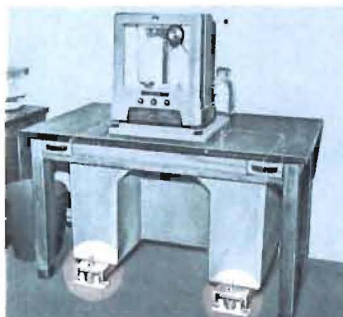
3 Apartment rooftop installation of fans, compressors, pumps and boilers free valuable basement space for rental garages. Guaranteed vibration-noise control cost less than 1/2% of the mechanical contract!



4 Controls and lining of heat treating furnace are protected by Korfund Isolators against shock from nearby 15,000 lb. steam hammers.

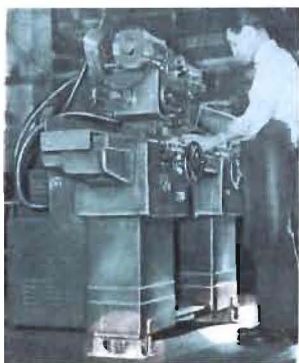


5 This 100 ton punch press installed on an upper floor could not be operated until Korfund Isolators stopped vibration and noise to floors below.

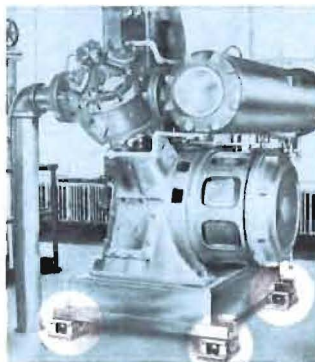


6 Korfund Isolation protects this delicate analytical balance from vibration and shock caused by crushing and shaking equipment in mineral processing plant.

7 Precision grinder accuracy protected against external vibration by Korfund Isolators which also eliminate special foundation and costly lagging down.



8 Large compressor on research laboratory's upper floor. Korfund Isolators stopped vibration transmission to sensitive instruments, reduced noise level.



OPTICAL INSTALLATION ARRANGEMENTS

If driving motors are not mounted on the machine, it is usually desirable that both machine and motor be mounted on a common structural steel base or concrete foundation under which the Isolators are placed. Direct coupled machines should always have a common steel base or concrete foundation.

DIRECT MOUNTING — EXTERNAL ADJUSTING BOLT (LK & LN)

1) **STANDARD ISOLATORS** — The standard method of installing the Isolators is shown in fig. 1. However, for most machines **BOLTING TO FLOOR IS NOT REQUIRED**. Where some fastening is desired, Isolators can be cemented to floor by means of felt or waffle-embossed synthetic rubber sound pads. See "To Bolt or Not to Bolt" on page 3.

DIRECT MOUNTING — INTERNAL ADJUSTING BOLT (LI & LO)

2) **ISOLATORS WITH INTERNAL ADJUSTMENT** — Where machines do not have foundation holes, Isolators can be furnished with internal adjusting bolt at no extra charge. Such machines usually require no fastening at all, but if fastening is required felt pads and cement (see "To Bolt or Not to Bolt" on page 3) can be furnished for fastening machine to Isolators.

3) **MACHINES WITH OFF-CENTER OR RECESSED BOLT HOLES** — Where bolt holes are not in the center of the machine leg and the leg would overhang Isolator, internally adjusted Isolators can be furnished with off-center hole tapped in top plate without extra charge; or use fig. 2. Where bolt holes are set in the sides of the machine base in pockets of insufficient height for the adjusting bolt, the internally adjusted Isolators may be furnished with tapped top plates to accommodate a short fastening bolt separate from the adjusting bolt; or use fig. 2.

NOISE ABSORPTION

4) **ISOLATORS WITH SYNTHETIC RUBBER SOUND PADS** — For critical installations where noise and high frequency disturbances accompany the lower frequency vibrations, waffle-embossed synthetic rubber sound pads are recommended under the Isolators. These 1/4" thick Elasto-Grip pads provide a non-skid surface normally requiring no bolting, but they may be bolted as shown, or cemented to the Isolator and floor with special cement (developed strength 30 psi), depending on job requirements.

HEIGHT REDUCTION

5) **SADDLES** — If increase in height of isolated machine is objectionable, the machine may be supported on angle or channel iron cradles running between brackets (gusset plates may be used to strengthen brackets), or the brackets can be bolted or welded directly to the machine base.

CONCRETE BLOCKS

NOTE: Placing internally adjusted Isolators directly under the block is usually the simplest method and the cheapest to construct (see figure 2). If Isolators are not accessible for adjustment, consult Korfund regarding pre-adjusted units.

6) **THRU-BOLTS** — With thin concrete blocks, the Isolators may be placed under block with extra long adjusting bolts (extra charge) passing through cast-in pipe sleeves.

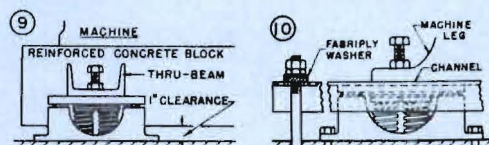
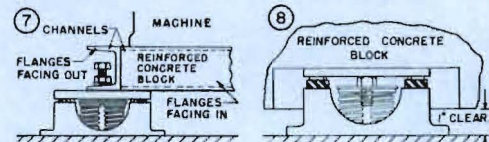
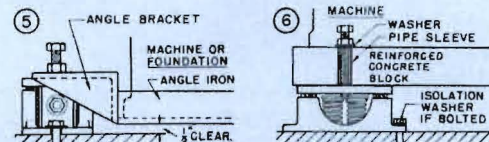
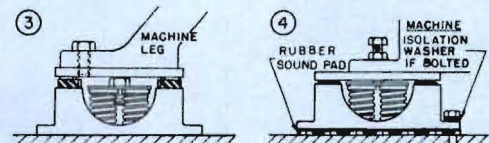
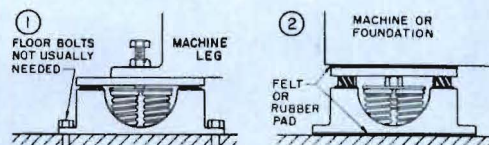
7) **STEEL FRAME** — It is often convenient to cast a small concrete block within a channel angle iron frame; flanges point out at all sides at which Isolators are attached. Brackets (see figure 5) may also be used here to reduce installation height, in which case frame flanges point inward.

8) **POCKETS** — To keep installation height at a minimum, or to permit casting block in place on floor, and raising with Isolator leveling bolts, place internally adjusted Isolators in pockets recessed in bottom of block.

9) **THRU-BEAMS** — The same advantages as in #8 can be obtained by attaching Isolators to the ends of cast-in beams running clear through the concrete block.

MOBILE INSTALLATIONS

10) **LIMIT STOPS** — Where large external forces (e.g. marine or mobile installations) or internal forces (e.g. dynamos subject to short circuits) may overturn the isolated equipment, limit stops should be used. Also used in outdoor installations subject to wind loads. If limit stops cannot be accommodated in the machine base, channel irons should be provided, as shown.



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